Case Study

With a team of around 200 in-house software developers based in Berlin, AVM develop the software that powers their own range of DSL routers. As the market-leading manufacturer of DSL devices in Germany, their software development cycle has to be continual to meet the increasing demand for a high-quality, reliable and secure on-line experience. The company have recently released their new Fritz!Box range, for example, which connects DSL to the faster WLAN N wireless technology and enables data transfer rates of up to 300Mbit/s gross.


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As AVM's Head of Core Development Hans-Juergen Ortmann explains, the challenge his development team face is writing software that can be adapted to support the various functions of their product ranges: "We have to develop the software for many different hardware devices with different specifications and functions, yet we try wherever possible to develop a universal code base that can then be altered when necessary. Additional Open Source elements are then used when needed".

The requirements of the hardware that AVM develop are such that the build environment is very complex and, with new products being developed all the time, the software has to be adapted constantly. As Mr Ortmann explains: "With each of our products having different features, we essentially assemble a specialised, complete Linux distribution for each device". The firmware AVM develop for each project is a bootable Linux distribution with a bootloader, kernal, drivers and applications, and this is problematic in itself".

With multiple dependencies and variations, a software testing tool capable of shortening AVM's development time was essential. But with such complicated software to develop in such a difficult environment, AVM required an advanced static analysis tool capable of thorough and diverse code testing which could be integrated fully into their set-up.

Emenda Software first went to AVM's Berlin office to demonstrate Klocwork K7 in November last year. This was followed by a workshop in which the full functionality of the tool was applied to AVM's code, which is written primarily in C with some C++. Having seen the potential utility of Klocwork in their development process, AVM had a further evaluation before purchasing 10 licences. And the results have been positive.

Founded in 1986 in Berlin, AVM is one of the top two manufacturers of ADSL devices in Europe. With over 50 percent of the market share, it is the leading manufacturer in Germany, Europe's largest market. AVM has 460 employees and generated a turnover of €280 million in 2007 fiscal year.

Based throughout Europe, Emenda provide software development and software testing consultancy and tools to customers worldwide. With a strong background in safety- and mission-critical software testing, Emenda has core competence and expertise in the verification and validation of software to external software standards.

As Mr Ortmann says, “We were impressed with what Klocwork offered and felt that the tool could help us reduce the time it takes to develop our software, which is what we were looking for.” Despite the complexity of the build environment at AVM, Klocwork integrated seamlessly into their set-up. “We have a lot of experience at customising programs to fit into our build environment and therefore chose to integrate Klocwork without external help. Altering our system can be labour-intensive and difficult but integrating Klocwork went without any significant problems. I was deeply impressed with this,” explains Mr Ortmann.

Beyond the success of integrating Klocwork, AVM have also been pleased with the functionality of the tool. “We have made full use of Klocwork and it has shown some interesting results,” said Mr Ortmann. “We have found a number of bugs, both from home-grown software and Open Source applications. Even results that might be considered false positives have been useful in highlighting code that could be neater, and constantly improving code quality is something we encourage,” he said.

Overall, AVM's team of software developers were happy with the service provided by Emenda. “Emenda were very professional. They had an excellent understanding of the product and how it could help us achieve our development goals. They were always quick to answer queries and we would certainly consider using them again in future," said Mr Ortmann.

As Emenda's Technical Consultant Neil Langmead explains, the experience has been positive for them as well. “Working with AVM is a pleasure. We are all about improving software quality and we were impressed with AVM's commitment and approach in this respect,” he said. “From the start AVM showed they were serious about enabling their developers to check-in bug-free code. We are confident that Klocwork will be a great asset to AVM as they continue to develop cutting-edge software for their award-winning DSL devices”.

AVM have recently upgraded to Klocwork Insight, purchasing 50 licences for the new version of the software. “We were happy with the results we got from Klocwork K7,” explains Mr Ortmann, “and this helped us make the decision to upgrade on a larger scale to Klocwork Insight.” As well as continuing to improve code quality and cut development time, Mr Ortmann anticipates that the desktop function of Klocwork Insight will change the way they develop software at AVM: “Klocwork Insight not only provides useful metrics for managing developers,” he explains. “It also makes it easier for developers to analysis their own code and, if necessary, make improvements before it is checked in. This allows developers to continually improve their code and will hopefully encourage a culture where bugs are openly discussed. As a company committed to positive change and quality improvement, this is very good for us.”

Further Information

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www.emenda.eu